



# ***Decibell Consulting*** *pty Ltd*

Proposed Stage 6, 7 and 8  
459-489 Ripley Road,  
Ripley

## **ENVIRONMENTAL NOISE IMPACT REPORT**

Prepared for

**Satterley Property Group**

**12<sup>th</sup> January 2021**

Decibell Report No. 1910164 ver B

### **Decibell Consulting Pty Ltd**

30 Albert St,  
Woolloongabba QLD 4102

**t** (07) 3391 5096  
**f** (07) 3391 5096  
**e** [decibellconsulting@gmail.com](mailto:decibellconsulting@gmail.com)

**ABN 77 108 203 998**

**Contents**

	<i>Page</i>
<b>1.0 Introduction .....</b>	<b>3</b>
1.1 The Proposal.....	3
<b>2.0 Equipment .....</b>	<b>3</b>
<b>3.0 Measurement Procedure .....</b>	<b>4</b>
<b>4.0 Noise Criteria.....</b>	<b>5</b>
4.1 Traffic noise.....	5
<b>5.0 Results and Calculations.....</b>	<b>7</b>
5.1 Traffic Noise.....	7
<b>6.0 Recommended Acoustic Treatments .....</b>	<b>12</b>
6.1 Traffic Noise.....	12
<b>7.0 Discussion &amp; Conclusions.....</b>	<b>14</b>
<b>APPENDIX.....</b>	<b>15</b>

## **1.0 INTRODUCTION**

This report is submitted in response to a request by JFP Urban Consultants, on behalf of Satterley Property Group for a traffic noise impact assessment in relation to proposed Stages 6-8 of the development located at 459-489 Ripley Road, Ripley. This report seeks to assess the future impact of traffic noise generated by Ripley Road on the proposed development. The report will also make recommendations regarding noise covenants for the proposed Lots within the subdivision. This report will form part of a development application to be submitted to the Ipswich City Council.

On-site noise logging and attended noise measurement were conducted, and through modelling, predictions of noise impacts on the proposed development have been produced. Based upon these predicted levels, recommendations regarding acoustic treatments and management practices have been specified.

### **1.1 The Proposal**

The site forms part of a large residential development that will be developed over land at 459- 489 Ripley Road, Ripley. This portion of the development comprises of three stages which will be called stage 6, 7 and 8. Over the course of the development of the three stages a total of 86 residential lots will be developed plus a drainage reserve.

The portion of the site that will be developed in these stages of the development will be towards the north east corner of the large site. This portion of the site fronts directly onto Ripley Road. The traffic volumes on Ripley Road are expected to grow significantly in future years as the Ripley area is developed. As such traffic noise generated by these roads has the potential to impact future dwellings within the development and will be considered in this report.

A site plan showing the proposed development layout is included in the appendix to this report.

## **2.0 EQUIPMENT**

### **2.1 Existing Traffic Noise Assessment**

The following equipment was used to record existing ambient noise levels at the site:

- Bruel & Kjaer 4231 Calibrator;
- Rion NL 21 Environmental Noise Logger.

## 3.0 MEASUREMENT PROCEDURE

### 3.1 Traffic Noise Measurement

The logger was positioned along the boundary of the site on the Ripley Road frontage of the site and used to conduct noise measurements. As the logger was located clear of any buildings on site, measurements recorded by the logger can be regarded as free field. The location of the logger is marked on aerial photograph below.



Figure 1: Logger Measurement Location

The logger was set to record noise statistics in 15 minute blocks continually over 48 hours in consecutive periods from Tuesday 17/09/19 to Thursday 19/09/19. The statistical interval was chosen to allow application of AS/NZS 2107:2000 'Acoustics – Recommended Design Sound Level and Reverberation Times for Building Interiors'.

Ambient noise level measurements were conducted generally in accordance with Australian Standard AS1055 1997 "Acoustics – Description & Measurement of Environmental Noise".

The operation of the sound level measuring equipment was field calibrated before and after the measurement session and was found to be within 0.1 dB of the reference signal. All instrumentation used in this assessment hold current calibration certificate from a certified NATA calibration laboratory.

Weather conditions during the survey were fine, with light winds and temperatures ranging from 12° C to 28° C over the measurement period.

## 4.0 NOISE CRITERIA

### 4.1 Traffic Noise

The Ipswich Planning Scheme Part 12 Div 5 – *Reconfiguring a lot* Code Specific Outcome 12 relating to Moderate and Major Sub-divisions states:

(12) Residential premises are –

- a) Not exposed to unacceptable traffic noise<sup>5</sup>;

<sup>5</sup> Refer to Department of Transport and Main Road, Code of Practice Road Traffic Noise for the road traffic noise criteria.

*Department of Transport and Main Road, Code of Practice Road Traffic Noise* is a superseded document however the criteria do relate to the present *State Development Assessment Provisions State Code 1-Development in a state-controlled environment* and as such will be used to assess noise impacts from the Ripley Road on the proposed development.

The criteria set out in the *Department of Transport and Main Road, Code of Practice Road Traffic Noise* relating to Residential Properties are:

- 63 dB(A) L<sub>10</sub> (18 hour)\* or less, where existing levels are measured at the local government deemed-to-comply dwelling setback distance are greater than 40 dB(A) L<sub>90</sub> (8 hour) between 10 pm and 6am; or
- 60 dB(A) L<sub>10</sub> (18 hour)\* or less, where existing levels are measured at the local government deemed-to-comply dwelling setback distance are less than or equal to 40 dB(A) L<sub>90</sub> (8 hour) between 10 pm and 6am; or

\* Note external levels stated are façade corrected;

The *Department of Transport and Main Road, Code of Practice Road Traffic Noise* also stated criteria relating to balconies and formal external open space. These criteria are:

- 60 dB(A) L<sub>10</sub> (18 hour)\* or less, where existing levels are measured at the local government deemed-to-comply dwelling setback distance are greater than 45 dB(A) L<sub>90</sub> (18 hour); or
- 57 dB(A) L<sub>10</sub> (18 hour)\* or less, where existing levels are measured at the local government deemed-to-comply dwelling setback distance are less than or equal to 45 dB(A) L<sub>90</sub> (18 hour);

\* Note levels stated for these outdoors are stated as free field;

Where the external traffic noise criteria relating to residential properties cannot be achieved on a particular Lot within the proposed development it is recommended that a property note be recorded against the proposed lot detailing the requirements for future dwelling to be constructed on the lot in relation to the *Queensland Development Code (QDC) MP 4.4 – Buildings in a transport noise corridor*.

The *Queensland Development Code (QDC) MP 4.4 – Buildings in a transport noise corridor* details particular Performance Requirements with respect to Residential buildings constructed in a transport corridor. These Performance Requirements are:

*P1 Habitable rooms in residential building located in a transport corridor are adequately protected from transport noise to safeguard occupants' health and amenity.*

In order to achieve the Performance Requirements the following *Acceptable Solutions* are proposed under the Code:

*A1 The external envelope of habitable rooms in a residential building located in a transport noise corridor complies with the minimum Rw for each building component specified in Schedule 1 to achieve a minimum transport noise reduction level for the relevant noise category by:*

*(a) Using materials specified in Schedule 2; Or*

*(b) Using materials with manufacture's specifications that, in combination, achieve the minimum Rw value for the relevant building component and applicable noise category.*

The applicable noise category for a particular part or entire building is determined from Table 1 of Schedule 3 of *MP 4.4 – Building in a Transport Noise Corridor* from the *Queensland Development Code* and relates to the measured or predicted noise level 1m from the façade of the proposed or existing building. This table has been reproduced below and details noise levels relating to road and the appropriate *Noise Category Level*:

**Table 1 – Noise Category Levels**

Noise Category	Level of Transport noise *( $L_{A10,18hr}$ ) for State-controlled roads and designated local government roads
Category 4	$\geq 73$ dB(A)
Category 3	68 – 72 dB(A)
Category 2	63 – 67 dB(A)
Category 1	58 – 62 dB(A)
Category 0	$\leq 57$ dB(A)

\* Measured at 1m from the façade of the proposed or existing building

Under the Code once the relevant Noise Category has been determined for a particular building or level of a particular building a minimum transport noise reduction level must be achieved in the building. In order to determine that Rw rating for each building component to meet the requirement of code materials can be chosen from Schedule 2 of the code or an equivalent combination of materials can be determined.

## 5.0 RESULTS & CALCULATIONS

### 5.1 Road Traffic Noise

#### 5.1.1 Measured Levels Logger Survey

The table below presents measured road traffic noise levels measured over the two day period at the logger measurement location. The logger's location was away from any building that may have influenced measurements. Measurements therefore can be regarded as free field and as not including the +2.5 dB façade reflection. The  $L_{10,18hr}$  noise level was measured as approximately 64 dB(A). Graphical presentation of the logger measured noise levels are presented in the appendix to this report.

Descriptor	Time Period	Measured Level dB(A)
$L_{A10,18hr}$	6:00 am to 12:00 pm	64
$L_{A90,18hr}$	6:00 am to 12:00 pm	46

**Table 2:** Measured road traffic noise levels at proposed site.

#### 5.1.2 Existing and Future Traffic Flows

The existing and predicted traffic flows for Fischer Road and Ripley Rd were obtained from Acoustics RB Report No. 17-866.R02 which is the previously approved acoustic report over the site. These figures were in turn obtained from traffic counts and modelling conducted by PSA Consulting (Australia). Existing and predicted traffic volumes are presented below:

##### Existing Traffic Flows

Ripley Rd: 6500 vehicles per 18 hour, 5 % HV

##### Predicted Traffic Flows (Year 2029):

Ripley Rd: 20000 vehicles per 18 hour, 5 % HV

#### 5.1.3 Modelled Noise Levels – Existing Situation

Road traffic noise predictions were conducted using PEN 3D 2000, a CoRTN based model produced by Ask Software Engineers, and CoRTN based software models are deemed acceptable by the Department of Transport and Main Roads. To verify the road traffic noise prediction model, the  $L_{A10,18hr}$  traffic noise levels were calculated and compared to the measured noise levels. The following assumptions were made in the verification of the noise model:

- The road surfaces were assumed to be dense graded asphalt;
- The source line of traffic noise on the road is 0.5m above the road surface;
- The traffic speeds along Ripley Rd are 70 km/hr and 60 km/hr along the northern part of the site as signed;

A print out of the calculations performed by the model is included in the appendix to this report. The results are compared to the measured value in the table below.

Predicted*	Measured*
$L_{A10,18hr}$	$L_{A10,18hr}$
64.7	64

**Table 3:** A Comparison of Predicted and Measured Traffic Noise Levels at the Logger Location

\* Levels are free field

This is within the allowable +/- 2 dB variation under the CoRTN methodology

#### 5.1.4 Modelled Noise Levels – Year 2029

If the validity of the model is now accepted, the predicted increased traffic flows for the year 2029 can be input into the PEN 3D 2000 model to predict the ultimate traffic noise impacts. The predicted ultimate traffic noise level  $L_{A10,18hr}$ , in the year 2029 at the measurement location is 69.6 dB(A).

In order to best present the results of modelling the PEN 3D 2000 model has been used to map the noise contours firstly relating to external open space criteria from the *Department of Transport and Main Road, Code of Practice Road Traffic Noise*. Following this the PEN 3D 2000 model has been used to map the traffic noise categories relating to the *Queensland Development Code (QDC) MP 4.4*. Noise contours were mapped at both ground and upper storey levels. It should be noted that the mapped contour levels are façade corrected and include the +2.5 dB correction (i.e. the -2.5 dB correction applied to the model above has been removed). Ground level receivers are assumed to be 1.8 m above ground level while first floor level receivers are assumed to be 4.5 m above ground level.

The noise contour maps produced by modelling are included in the next three pages of this report.





Contour Levels

- 75.0 to 80.0
- 70.0 to 75.0
- 65.0 to 70.0
- 60.0 to 65.0

**Traffic Noise Levels 2019**  
**Free Field L10 18hr Levels**

PEN3D © ASK Software Engineers







## 6.0 RECOMMENDED ACOUSTIC TREATMENTS

### 6.1 Traffic Noise

Results of traffic noise modelling are contained in Section 5.1 of this report. Traffic noise contour maps have been produced showing the effect of traffic noise on the site. The first of the Contour maps relate to the criteria for formal outdoor open space from the *Department of Transport and Main Road, Code of Practice Road Traffic Noise*. Examining this noise contour map it can be seen that the only residential location where traffic levels in outdoor areas will exceed the criteria for formal outdoor open space from the *Department of Transport and Main Road, Code of Practice Road Traffic Noise* is a tiny portion of Lot 824. Given that traffic noise levels across the majority of this lot will be below the criteria level and there is more than ample outdoor recreation space below the criteria levels it is not recommended that an acoustic barrier be constructed adjacent to the lot.

Following the traffic noise contour map relating to the outdoor areas, two traffic noise contours maps relating the noise categories from the *Queensland Development Code (QDC) MP 4.4* have been produced. These show some Lots towards the Ripley Road frontage will experience traffic noise levels that require the inclusion of acoustic treatments in line with the Noise Categories from the *Queensland Development Code (QDC) MP 4.4*.

To ensure that the requirements of *Queensland Development Code (QDC) MP 4.4* are carried through into the construction of the future dwellings in the development, it is recommended that covenant be recorded against those lots identified as affected by traffic noise.

Modelling determined that the ground level of any future dwellings constructed on the following lot would be classified into *Noise Category 1* from the *Queensland Development Code (QDC) MP 4.4* while the Upper Levels would be classified into *Noise Category 2* and hence require specialist acoustic treatments:

Lot 640;

To ensure that the required specialist acoustic treatments are included in future dwelling constructed on this Lot it is recommended that the following covenant be register over this lot:

*This Lot has been identified as being impacted by Traffic Noise. This has resulted in the lot as being classified into Noise Category 1 at ground storey level and Noise Category 2 at upper storey level from the Queensland Development Code (QDC) MP 4.4. Further assessment to determine the required acoustic treatments to future dwellings constructed on the lot should be undertaken in accordance with Queensland Development Code (QDC) MP 4.4 such that these buildings contain sufficient acoustic treatments to meet the requirements of this Code.*

Modelling determined that the ground and upper levels of any future dwellings constructed on the following lots would be classified into *Noise Category 1* from the *Queensland Development Code (QDC) MP 4.4* and hence require specialist acoustic treatments:

Lots 601, 602, 603, 604, 635, 636, 637, 638, 639, 641, 723 and 724;

To ensure that the required specialist acoustic treatments are included in the future dwellings constructed on these Lots it is recommended that the following covenant be register over these lots:

*This Lot has been identified as being impacted by Traffic Noise. This has resulted in the lot as being classified into Noise Category 1 from the Queensland Development Code (QDC) MP 4.4. Further assessment to determine the required acoustic treatments to future dwellings constructed on the lot should be undertaken in accordance with Queensland Development Code (QDC) MP 4.4 such that these buildings contain sufficient acoustic treatments to meet the requirements of this Code.*

Finally, modelling determined that the upper levels of any future dwellings constructed on the following lots would be classified into *Noise Category 1* from the *Queensland Development Code (QDC) MP 4.4* and hence require specialist acoustic treatments:

Lots 605, 634, 701, 721 and 722;

To ensure that the required specialist acoustic treatments are included in the future dwellings constructed on these Lot it is recommended that the following covenant be register over these lots:

*This Lot has been identified as being impacted by Traffic Noise. This has resulted in the lot as being classified into Noise Category 1 at upper storey level from the Queensland Development Code (QDC) MP 4.4. Should a future dwelling including upper storey levels be construct on this Lot. Further assessment to determine the required acoustic treatments to upper storey level of future dwelling constructed on the lot should be undertaken in accordance with Queensland Development Code (QDC) MP 4.4 such that these buildings contain sufficient acoustic treatments to meet the requirements of this Code*

## 7.0 DISCUSSION & CONCLUSIONS

In this report the potential traffic noise impact generated by Ripley Rd on the development has been considered. Traffic noise impacts on the development have been assessed in accordance with Ipswich Planning Scheme Part 12 Div 5 – *Reconfiguring a lot Code* Specific Outcome 12 using the road traffic noise criteria from the *Department of Transport and Main Road, Code of Practice Road Traffic Noise for the road traffic noise criteria*.

Traffic noise levels on the proposed Lots were firstly assessed using the criteria for formal outdoor open space from the *Department of Transport and Main Road, Code of Practice Road Traffic*. This assessment determined that the only residential location where traffic levels in outdoor areas exceeded the criteria for formal outdoor open space from the *Department of Transport and Main Road, Code of Practice Road Traffic Noise* was a tiny portion of Lot 824. Given that traffic noise levels across the majority of this lot will be below the criteria level and there is more than ample outdoor recreation space below the criteria levels it has not been recommended that an acoustic barrier be constructed adjacent to the lot.

Following this, traffic noise levels on the residential lots were assessed against the traffic noise levels relating to the noise categories from the *Queensland Development Code (QDC) MP 4.4*. This assessment showed that some Lots towards the Ripley Road frontage of will experience traffic noise levels that require the inclusion of acoustic treatments in line with the Noise Categories from the *Queensland Development Code (QDC) MP 4.4*. To ensure that the requirements of *Queensland Development Code (QDC) MP 4.4* are carried through into the construction of future dwellings on these lots it is recommended that covenant be recorded over them requirement the inclusion of the acoustic treatments.

Based upon our calculations and following the registering of the required covenants on the Lots identified in this report Decibell Consulting believe that the development will comply with the Ipswich Planning Scheme Part 12 Div 5 – *Reconfiguring a lot Code*, the *Ripley Development Scheme* and the *Queensland Development Code (QDC) MP 4.4 – Buildings in a transport noise corridor* and should be approved

Report Compiled by:

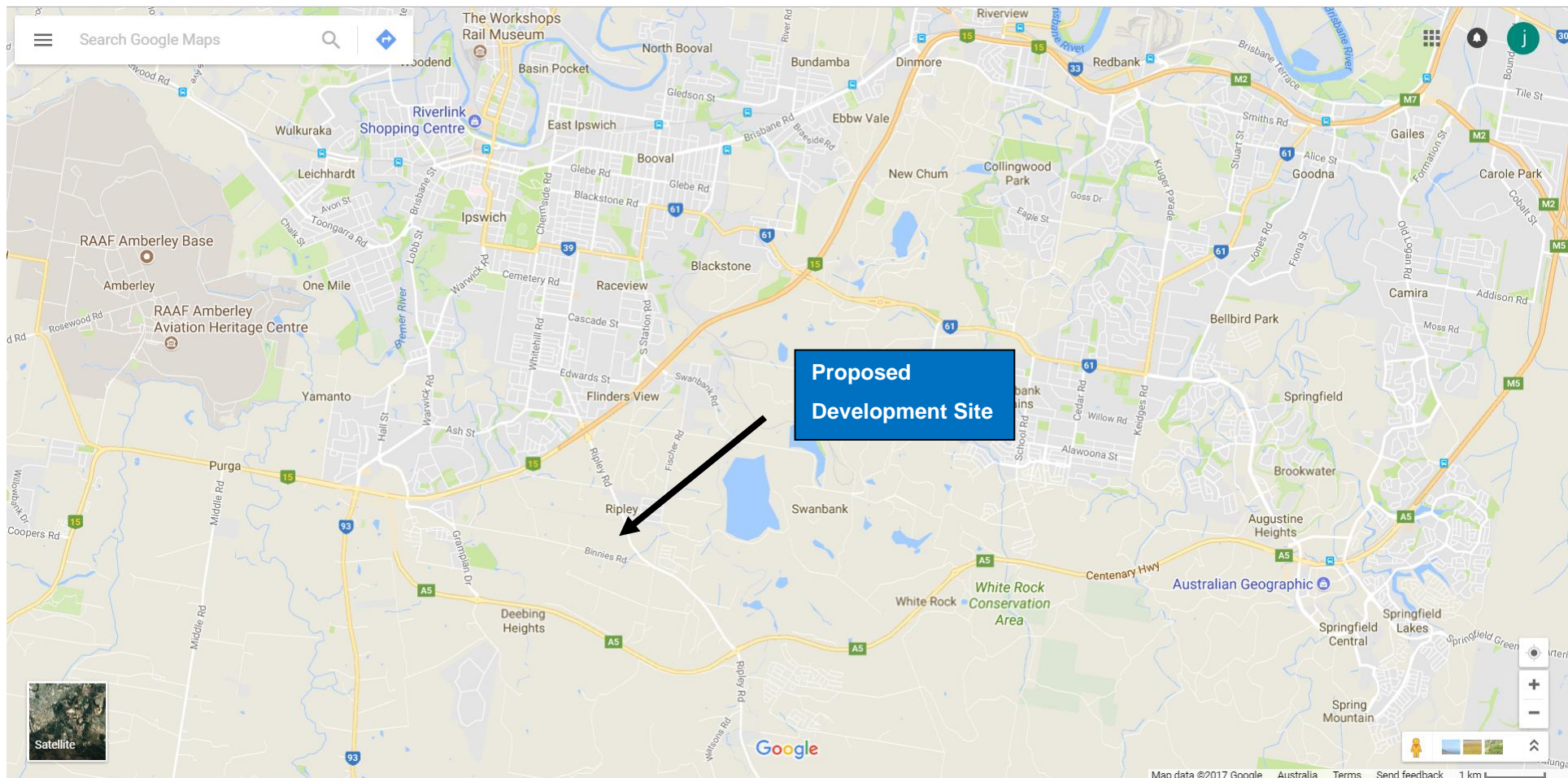


**John Cristaudo BE, RPEQ, MAAS**  
Decibell Consulting

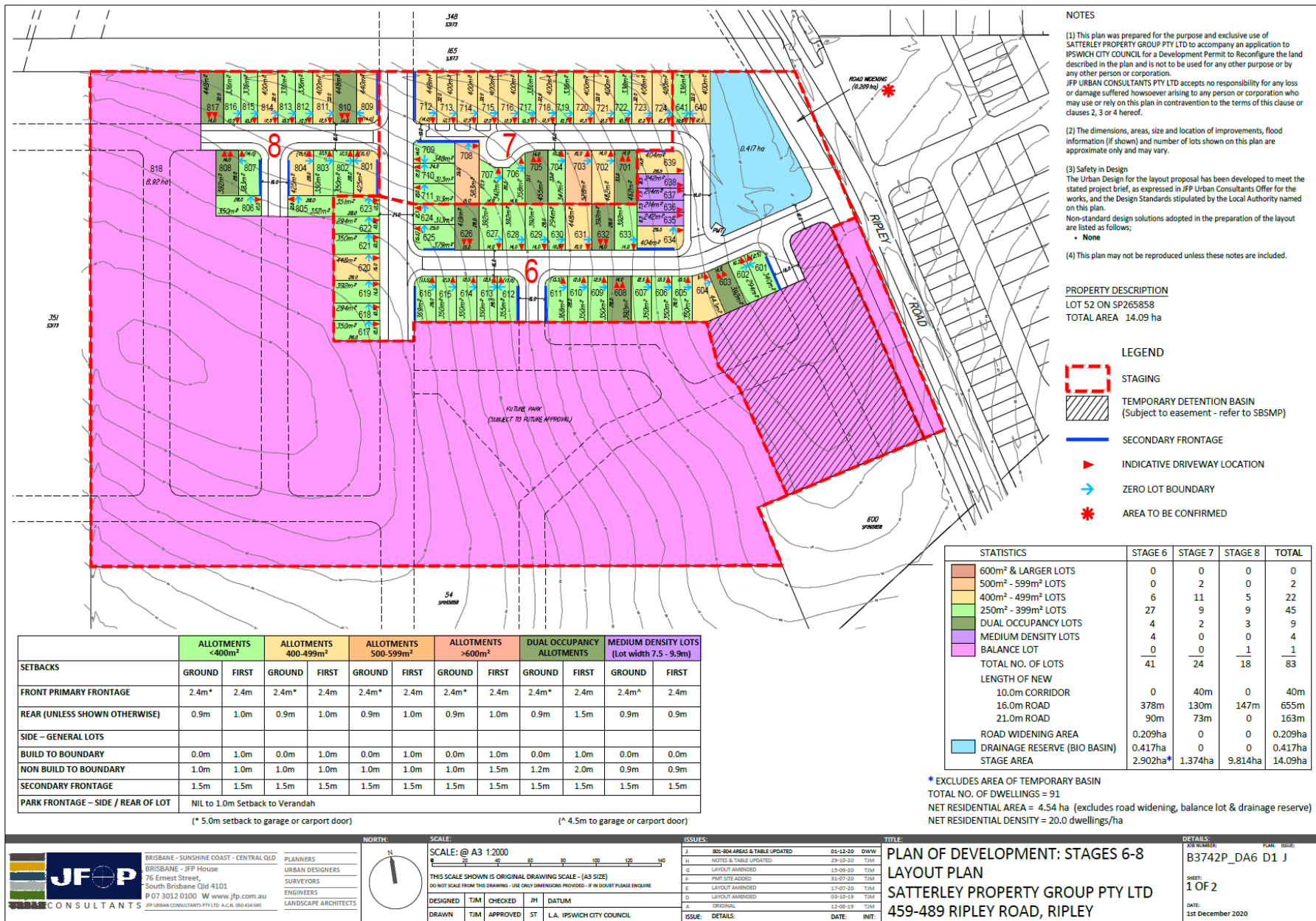
## **APPENDIX**



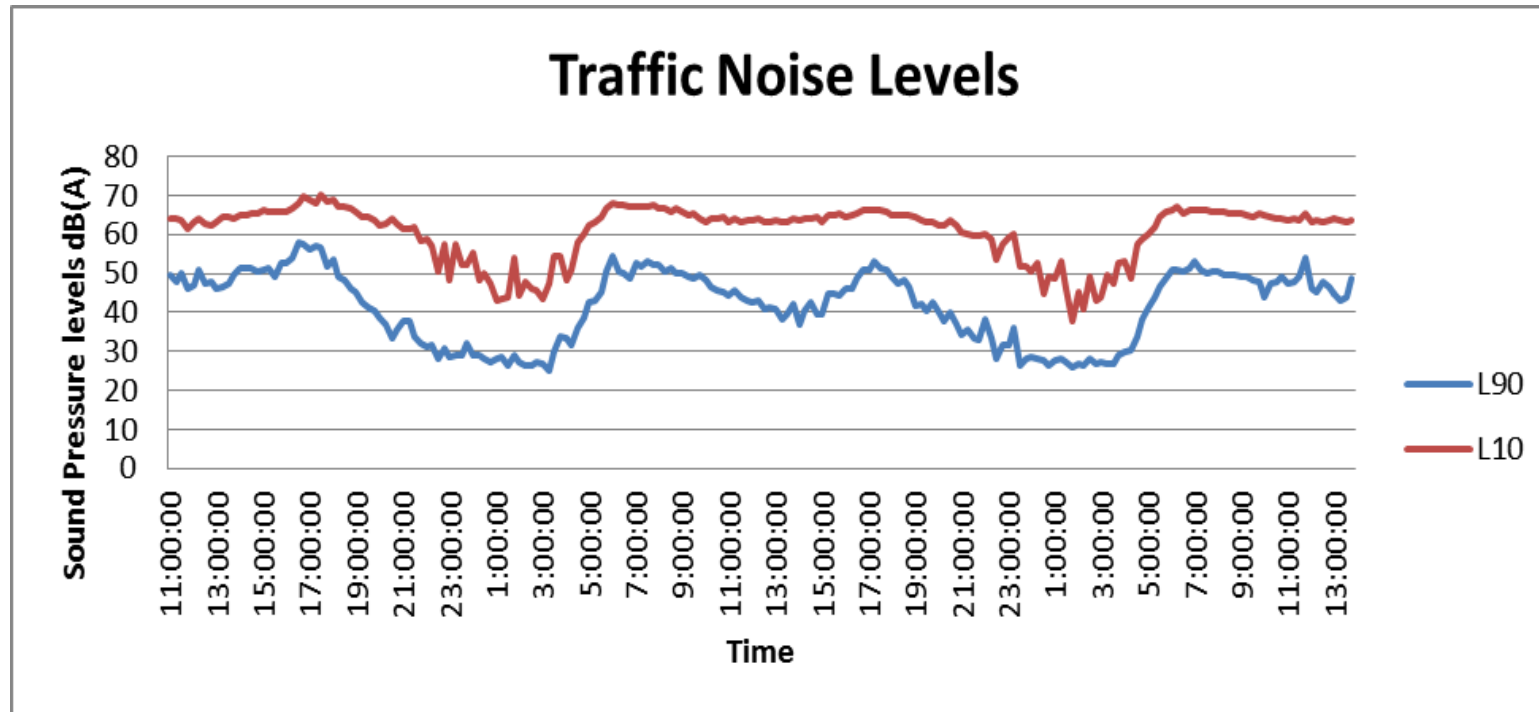
## Sketch No.1 -Location of Proposed Development Site







## **TRAFFIC NOISE MODELLING**



---

## POINT CALCULATIONS

Pen3D2000 V1.9.8

Project Code:Pen

Project Description: PEN noise model

File:C:\dB consulting\Noise Jobs\459-481 Ripley Rd Ripley\459 Ripley Rd Ripley.PEN

File Description: logger 2019

Thursday 17 Oct, 2019 at 15:29:38

### CoRTN Calculations

All road segments included. Segmentation angle: 10degrees. Road elevations apply.

Receptor

X Posn

Y Posn

Height

L10(18hour)

(m)

(m)

(m)

(dB(A))

logger

253.6

72.0

1.5

64.7

---

## POINT CALCULATIONS

Pen3D2000 V1.9.8

Project Code:Pen

Project Description: PEN noise model

File:C:\dB consulting\Noise Jobs\459-481 Ripley Rd Ripley\459 Ripley Rd Ripley.PEN

File Description: Logger 2029

Thursday 17 Oct, 2019 at 15:30:24

### CoRTN Calculations

All road segments included. Segmentation angle: 10degrees. Road elevations apply.

Receptor

logger

X Posn

(m)

253.6

Y Posn

(m)

72.0

Height

(m)

1.5

L10(18hour)

(dB(A))

69.6

